



South Texas Weather Journal



NWS Corpus Christi, TX

2009-2010 Fall/Winter Edition

Hurricane Force Winds Produce Damage in the Coastal Bend

By Jason Runyen — Forecaster

Photo taken of cold front approaching the Corpus Christi International Airport on Oct 26



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A strong cold front moved through the Coastal Bend around noon on October 26th, 2009, producing strong to severe wind gusts, thunderstorms, and heavy rainfall. Most notable was a severe thunderstorm which produced a downburst over NAS Corpus Christi and Flour Bluff, and combined with the gradient wind behind the front to

produce wind gusts in excess of 80 mph. These wind gusts snapped several power poles in half along South Padre Island Drive and Flour Bluff Drive, bringing down power lines on vehicles and trapping motorists. In addition numerous large tree limbs and trees were snapped and uprooted on NAS Corpus Christi and in Flour Bluff. Over 180 feet of security fence around the base was blown down. In addition, several buildings on NAS Corpus Christi suffered torn roofing and gutters, damaged awnings, and one building had a section of metal roofing blown off. A few trailers and boats were also overturned. A NWS Storm Survey Team also observed business signs blown out, carports damaged, and windows blown out on multiple homes in the Flour Bluff area. Around 9,500 custom-

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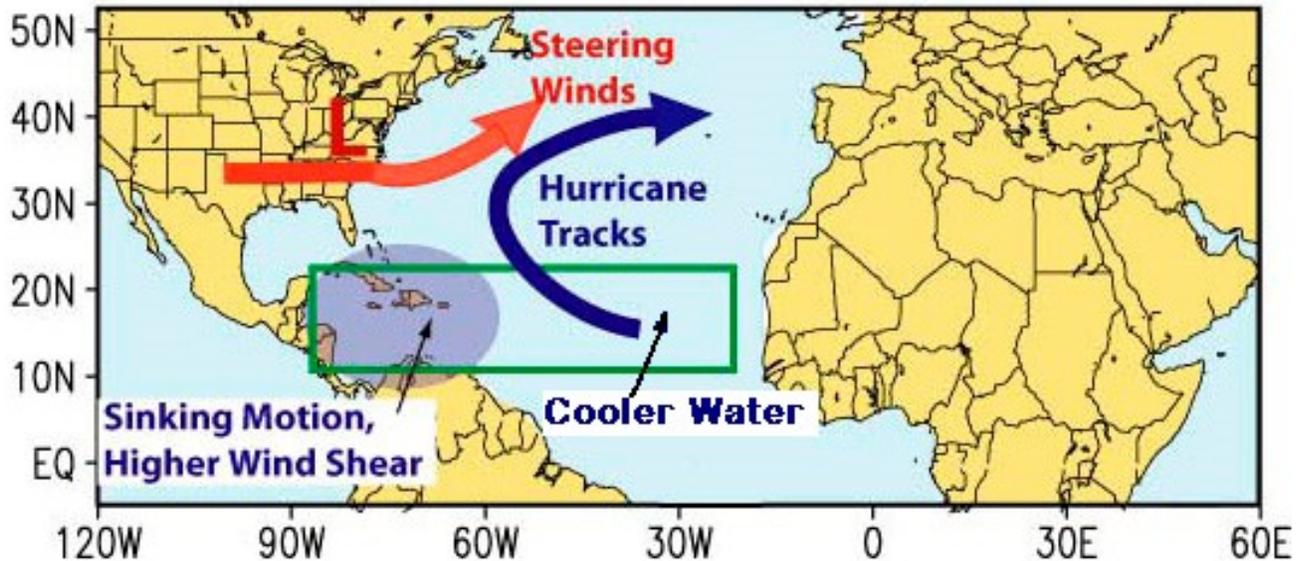


A LOOK BACK

Where Were Our Hurricanes?

By Jennifer Chase—Meteorologist Intern

Reasons the 2009 Season was Less Active



The 2009 hurricane season has been one of the quietest seasons over the past decade. Of course, no one is complaining after the recent damaging hurricanes, but this season has been so quiet it has many South Texas residents asking the same thing: Where were all the hurricanes?

The hurricane season is officially over on November 30th. Before the season started, the initial forecast from the Climate Prediction Center anticipated a near-normal season, with 9 to 14 named storms (average is 11) and 4 to 7 hurricanes (average is 6). The Climate Prediction Center updated their forecast on August 6th, dropping the forecast to below average activity with 7 to 11 named storms and 3 to 6 hurricanes. Including Hurricane Ida, there have been 3 hurricanes and 9 named storms so far this season, which falls within the range of the August 6th forecast. Thus far, the only storms to enter the Gulf of Mexico have been Tropical Storm Claudette and Hurricane Ida. Claudette made landfall over the Florida Panhandle with 50 mph winds. Ida made landfall as a tropical storm in southern Alabama after reaching category 2 strength (105 mph winds) during its peak as it entered the southern Gulf of Mexico. This season, no tropical cyclones of hurricane strength have made landfall in the U.S. and the official season ends November 30th.

Why was this season so calm compared to previous seasons?

(Above) Depicts the primary reasons for less tropical activity across the Atlantic during the 2009 season

The two primary reasons were the onset of El Niño conditions and slightly cooler than normal sea surface temperatures across the tropical Atlantic Ocean. El Niño, the warm phase of the El Niño Southern Oscillation (ENSO), occurs when easterly trade winds over the Pacific Ocean weaken and ocean temperatures across the eastern and central equatorial Pacific Ocean rise to above normal values. This change in ocean temperature has significant effects on global weather patterns, including producing stronger upper-level winds and sinking motion over the Caribbean Sea and tropical Atlantic Ocean. These higher winds disrupt tropical cyclones' ability to become symmetrical and thus limit their development. Tropical cyclones require good symmetry in order to become efficient heat engines, which is what causes these storms to organize and strengthen. In recent years, 2002 and 2006 both experienced developing El Niño episodes and near normal tropical activity. In 2006, the prevailing westerly wind flow caused activity to turn away from the Gulf Of Mexico. For 2009, the Pacific Ocean rapidly transitioned from La Niña to El Niño in May, just before the start of hurricane season, effectively limiting hurricane potential. However, it only takes one significant tropical

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A LOOK AHEAD

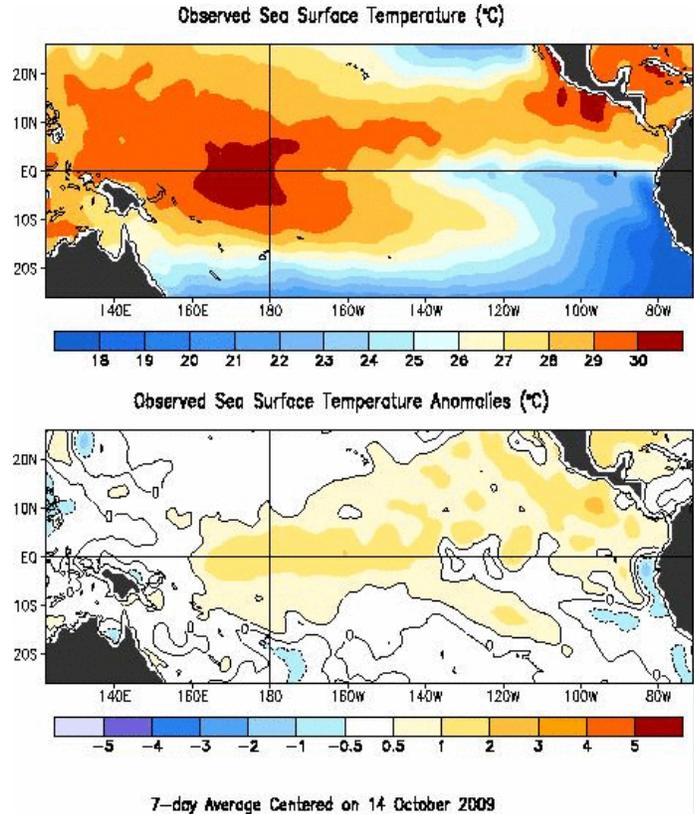
El Niño to Bring Rainfall Relief to South Texas

By Alex Tardy—Science and Operations Officer

Rainfall has finally become more frequent to South Texas since September and this may be partly attributed to the phenomena known as El Niño. Historically the average October rainfall during or entering all El Niño events is 3.63 inches compared to a normal of 3.94 inches. One reason this is not directly correlated is that rainfall has ranged from less than an inch to 10 to 12 inches for the month. Climatologists have found a better correlation with El Niño and the winter months. El Niño is the warming of the sea surface temperatures in the central Pacific Ocean near the Equator. The warming of the sea temperatures in the past has resulted in changes to the jet stream which steers most storms into the United States. During the El Niño phase of the El Niño Southern Oscillation (ENSO) the Pacific Jet stream tends to shift southward and become more consolidated and extended so that it brings more weather systems in the southern portions of the United States.

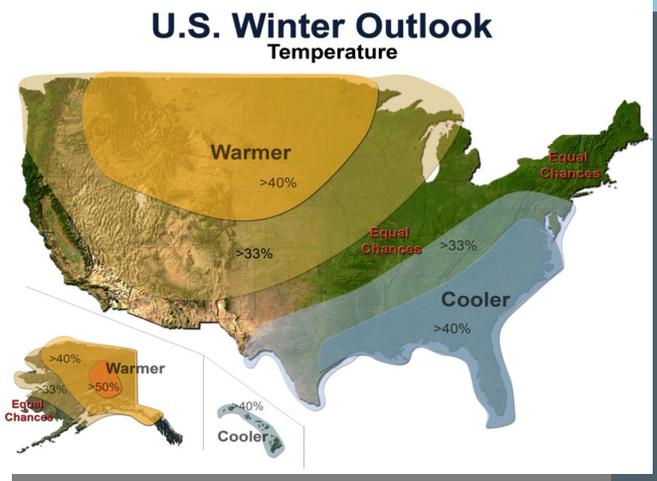
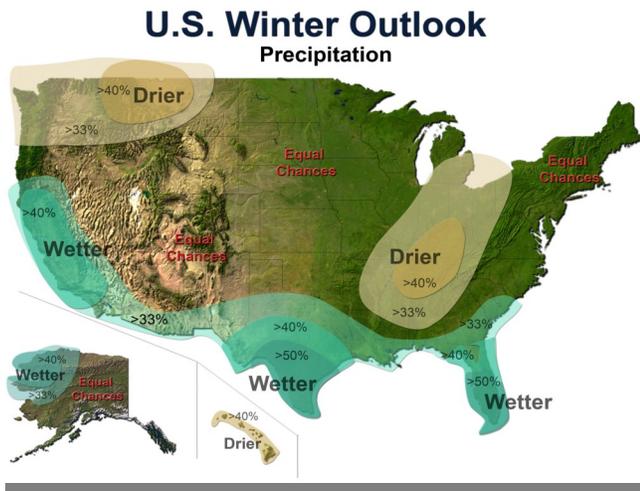
This year El Niño developed early this summer and Figure 1 displays current ENSO conditions that are considered to be in a high-end weak phase (0.9 Celsius above normal) and is forecast to enter into a moderate phase category during the winter months. The most recent El Niño episode occurred in the winter of 2006 to 2007. Though it is too early to predict the extent of the drought relief as parts of South Texas remain in exceptional drought (12 month deficits), the chances for above normal precipitation are now at 50 percent for December through February (Fig. 2). Historically, comparing El Niño events has indicated a drier trend in recent years but overall the average outcome is above normal precipitation. Forecasters use the historical trends and anomalies (departures from normal) along with climate forecast models to make their predictions. Therefore, the forecast still means there is a 25 percent chance

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(Above—Fig 1) Sea surface temperatures (top) and anomalies (bottom) are above normal across equatorial Pacific Ocean. 7 day average centered on October 14, 2009.

(Below—Fig 2) U.S. Winter Outlook for temperature and precipitation.





SCIENCE SCOOP

South Texas Summer '09 Hottest/Driest on Record Since 1917

By Alex Tardy—Science and Operations Officer

If you thought that this past summer (June through August) was hotter and drier than you could remember it was because it was the hottest summer ever and the driest since 1917! Both climate stations in Corpus Christi and Victoria experienced the hottest summer since records began in the late 1800s. The drought started in the fall of 2008 and continued through the summer of 2009. Rainfall deficits since September 2008 reached 18 inches at Corpus Christi and 2 feet at Victoria by August. Figure 1 depicts most of South Texas in the heart of an exceptional drought by early September (most severe category). The weather pattern was dominated by upper-level high pressure over western Texas and this combined with the dry ground to bring the extreme heat. The average high temperature at Corpus Christi was 98 degrees from June through August.

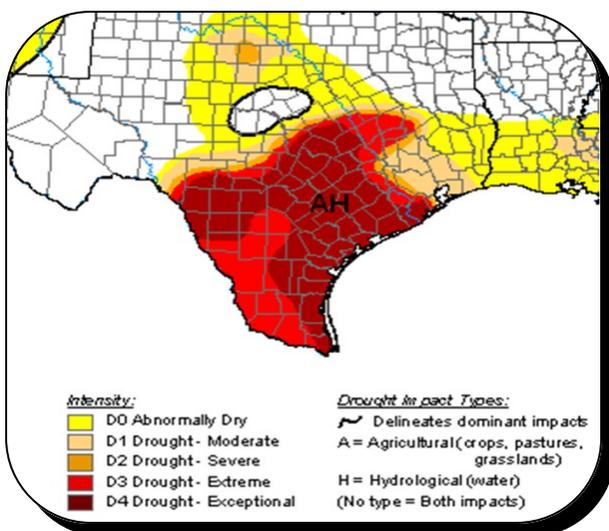
The Coastal Bend was hot but the Brush Country was even hotter. In Laredo, the temperature topped out at 100 or higher on 85 days from June through August. In fact, the average high temperature at the Laredo International Airport (LRD) in July was 107 degrees! Temperatures were so hot that historical statistics-based numerical model predictions were regularly several de-

(Right) This picture was taken along Highway 44. Vegetation died across the region and many areas suffered complete or partial loss of crops along the Coastal Bend. Only the hardiest crops were planted and harvested in the Coastal Bend.



grees too cool at Alice. The summer was especially unbearable to farmers and residents because the heat wave started early with dry windy days in May (Above). At Corpus Christi, there were 5 daily high temperature records tied or broken in May and an additional 27 record highs from June through August. The months of July and August were the hottest on record at Corpus Christi even when you include the high and low temperatures for each day (daily average temperature for the month). For the summer, the average mean temperature at Corpus Christi was 86.8 degrees. There were no breaks in this summer's heat wave which resulted in a period of 52 consecutive days of 95 degrees or hotter at Corpus Christi.

Past summers in 1998, 2005 and 2006 may indicate a trend to the hotter than normal weather. We would have to go back to the 1950's to observe dry and hot conditions that are close to the recent years. This makes it critical for us to be more efficient with water usage. Reservoirs in the region remain low but thanks to total storage not dropping below 50 percent there weren't restrictions placed in the Corpus Christi area. Extreme low water levels on the Guadalupe River resulted in water restrictions in Victoria. Recent rainfall of 7 to 13 inches across the Coastal Bend has brought much needed water for our rivers and water supply. However, normal rainfall will not be enough to bring us out of the current drought. El Niño conditions in the Pacific Ocean bring a chance for above normal rainfall this winter (see page 3).



Above—Figure 1. By early September 2009 drought severity reached its peak with all of South Texas in Extreme or Exceptional drought. Image from the US Drought Monitor.



COOP CORNER



2009 Coop Rainfall Totals to Date (Jan – Oct)



Alice Intl Arpt	8.07"
Aransas Wildlife Refuge	19.02"
Beeville 5 NE	22.74"
Benavides #2	13.49"
Bishop	14.68"
Calliham	22.86"
Choke Canyon Dam	15.30"
Coletto Creek Reservoir	17.77"
Corpus Christi Intl Arpt	13.28"
Cotulla	16.42"
Cross	12.07"
Encinal	5.44"
Fowlerton	14.19"

George West 2 SSW	12.97"
Goliad	27.77"
Kingsville	18.28"
Laredo #2	9.58"
Loma Alta	17.80"
Los Angeles 4 WSW	11.18"
Mathis 4 SSW	13.88"
Padre Island Seashore	13.44"
Point Comfort	22.71"
Port Aransas	8.10"
Port Lavaca	24.94"
Port O'Connor	26.84"
Refugio 3 SW	15.82"

Refugio 2 NW	19.29"
Robstown	6.71"
Rockport	13.10"
Sinton	16.32"
Three Rivers 8 NE	19.48"
Tilden 10 S	12.93"
Tilden 4 SSE	16.86"
Victoria Fire Dept #5	20.45"
Victoria Regional Arpt	20.67"
Welder Wildlife Refuge	19.61"
Whitsett	21.72"

New Coop Equipment!

By Jennifer Chase—Meteorologist Intern

One of the most important principles the National Weather Service stands for is data quality. It is better to have no data than bad data, because incorrect data will skew the truth about our climate. The Cooperative Network Program is a primarily volunteer-driven program that collects weather data across the entire nation. Lately, there have been upgrades to the automated rain gauges. These upgrades facilitate data collection while keeping the data consistent.

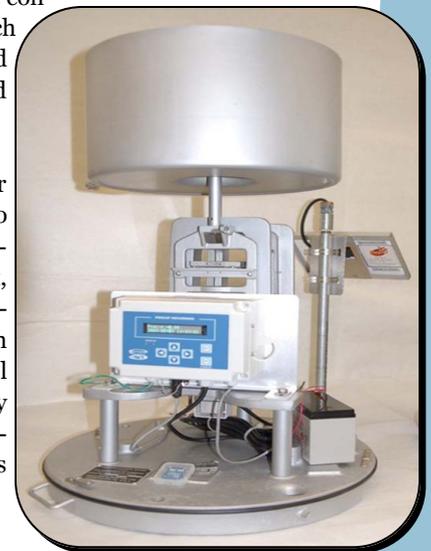
Back in September, Larry Maifeld, the Operations Program Leader at the National Weather Service in Corpus Christi, along with meteorologists Tony Merriman and Jennifer Chase went across the Southern Coastal Bend to upgrade Fischer-Porter rain gauges. From the outside, the rain gauges look the same. What changed was that nearly all moving parts were removed and replaced by simple electronic unit. These upgrades digitized the rain gauges. The rainfall data remains consistent because the same bucket is still used to catch the precipitation that falls. This bucket is weighed on an electronic scale instead of being measured through a series of gears and other moving parts.



(Above) Inside the original Fischer-Porter, with a punch tape and other mechanical parts.

(Right) Inside the rebuilt Fischer-Porter, with nearly all mechanical parts removed and replaced with a simple electronic unit, easily readable for our observers.

This greatly simplifies the ability to measure rainfall for both the National Weather Service and the volunteers who gather the data at the end of each month. With the upgrade, there are fewer parts that can break or wear out, which result in less maintenance and repair on the machines. The volunteers no longer have to handle “punch tapes” which they have to take out every month and mail to the National Weather Service. Instead, they simply insert a memory card into the unit and the data automatically downloads to the memory card. Every volunteer is delighted with the simplicity of the new system!





FEATURED NWS PRODUCTS

Graphiccasts Feature a Visual

By John Metz—Warning Coordination Meteorologist

Wouldn't it be nice if you could take one look at a weather map and get an idea of the type of weather and hazards you can expect for the day and week ahead. For the past year, Forecasters at your local National Weather Service have been producing such a map and it's available on our website. We call it the "Graphiccast" which stands for graphical forecast. The "Graphiccast" is updated every day by 6 am or more frequently when necessary and highlights cold fronts, areas to be impacted by precipitation and other hazardous weather. The "graphiccast" can be accessed from our web page by clicking on the icon shown to the right:

www.weather.gov/corpuschristi



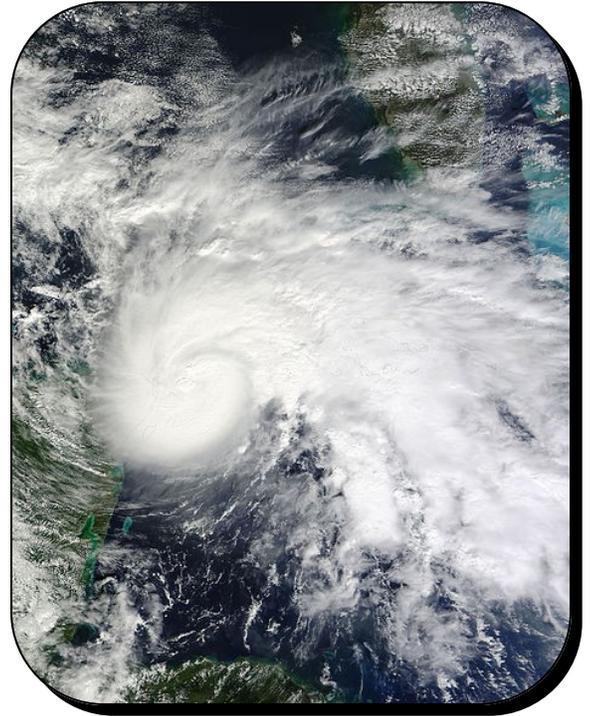
A LOOK BACK - CONTINUED

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cyclone to have a tremendous impact. In 1983 and 1992 two deadly and destructive hurricanes hit the US during seasons of below normal activity. Hurricane Andrew (1992) was the third most powerful hurricane to strike the US in recorded history and caused \$38.1 billion 2006 dollars in damage and 65 deaths. Alicia (1983) struck Galveston-Houston with 115 mph winds, causing \$5.27 billion 2006 dollars in damage and 21 fatalities.

A less significant reason for reduced hurricane productivity was related to sea surface temperatures in the eastern Atlantic Ocean being cooler than normal during the onset of the hurricane season. Tropical cyclones feed on hot ocean waters and are a significant process for transporting excess heat from the equator toward the poles.

While the Caribbean and Atlantic have been fairly quiet, there have been plenty of storms battering the Pacific. The season began quietly, with the first named storm of the season finally developing on June 21, the latest start to a Pacific hurricane season in 40 years. The season quickly intensified into one of the most active Augusts on record for the Pacific, with 7 named storms in August alone. In August, Typhoon Morakot hit Taiwan, Japan, the Philippines, Korea, and China. On October 17, Hurricane Rick grew to a Category 5 hurricane. Hurricane Rick was the second-strongest hurricane ever recorded in the Pacific east of the International Date Line. On October 4, a rapidly decaying Pacific Hurricane contributed to very heavy rainfall in Central Texas when it interacted with a frontal system. This brought relief to the drought especially in the San Antonio and far northern Coastal Bend areas. Although this was the most benign hurricane season since 1997 (the last occurrence of a strong El Nino), it isn't uncommon to have a quiet season in the U.S. Over the last ten years, no hurricanes hit the U.S. during 2000, 2001, and 2006. There was also a less active period from 1970 to 1994, and during this time there were six seasons when no hurricanes hit the US. **The important thing to remember is to always be prepared for any disaster.**



(Above) Category 2 Hurricane Ida in the Yucatan Channel on November 8, 2009. Ida reached wind speeds of 105 mph and caused 124 deaths in El Salvador.



SEVERE WEATHER, CONTINUED

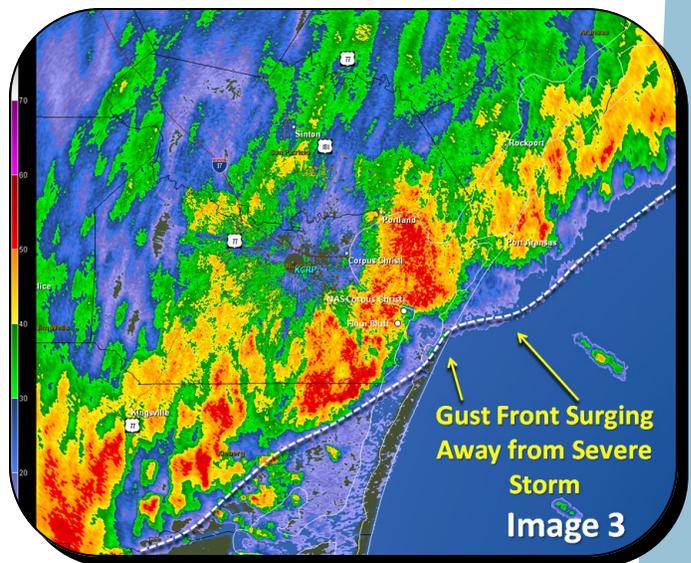
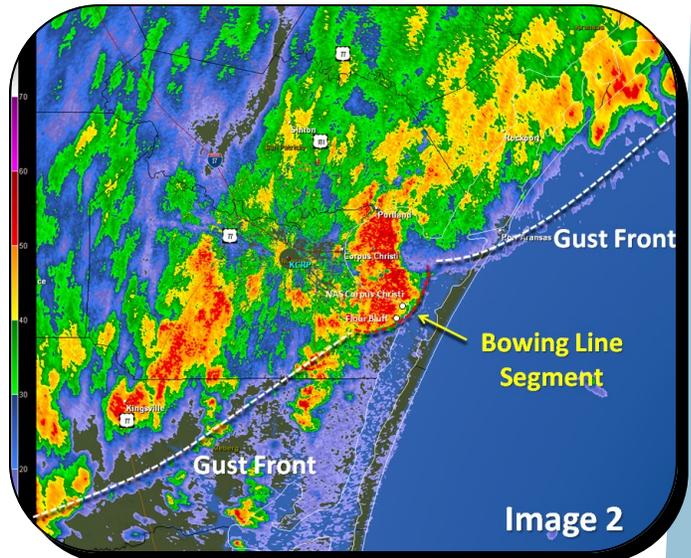
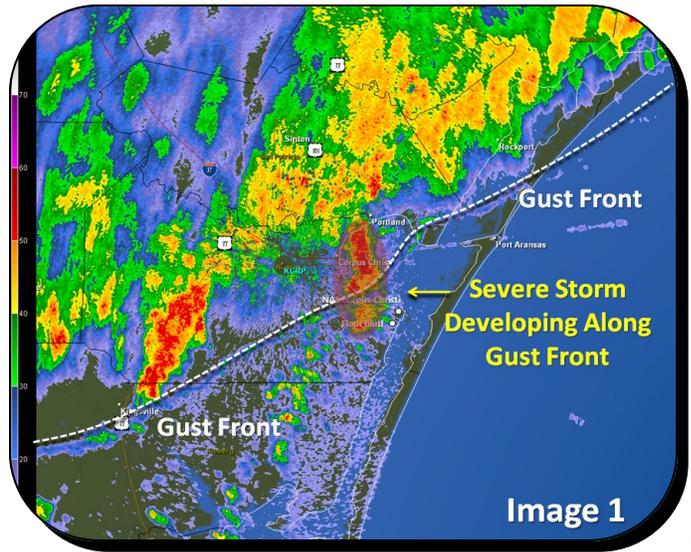
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ers were left without power.

NWS Doppler Radar imagery at 1116 AM showed a severe thunderstorm developing along and just behind the leading edge of the cold front as it approached the NAS Corpus Christi and Flour Bluff area (Image 1, right). As the downburst occurred a bow in the line of thunderstorms was observed at 1131 AM on radar over NAS Corpus Christi and Flour Bluff, indicative of severe straight-line winds (Image 2, right). By 1146 AM the gust front with severe winds had surged across Padre & Mustang Islands and into the Gulf of Mexico (Image 3, right).

In addition to the severe wind gusts at NAS Corpus Christi and Flour Bluff, very strong wind gusts were observed across much of the Coastal Bend, resulting from strong pressure rises behind the front across the Brush Country and Rio Grande Plains. Below are the peak wind gusts for the event across the Coastal Bend in addition to selected rainfall totals:

Port Lavaca	45 MPH	
Port O'Connor	50 MPH	
Padre Island Seashore	50 MPH	
Rockport	51 MPH	1.63"
Corpus Christi Intl	51 MPH	0.58"
NAS Kingsville	52 MPH	1.26"
Port Aransas	53 MPH	
Robstown	56 MPH	
Packery Channel	75 MPH	
NAS Corpus Christi	81 MPH	3.22"





SAFETY SEAGULL

Winter Safety

By John Metz—Warning Coordination Meteorologist

Is winter weather a threat to Texans? Absolutely! Just last year 19 people were killed in Texas while driving on icy roads with 477 fatalities nationwide. Many more Americans die due to exposure to cold and fires associated with improper use of space heaters.

When icy roads are present what should you do? If possible, wait for conditions to improve before venturing out. Take it slow, wear your safety belt, go easy on your brakes, be aware that bridges and overpasses ice first, turn into a slide, and use extreme caution if you stop to help a stranded motorist along the roadway because you could be caught in an accident yourself.

Each year people die in house fires due to improper use of space heaters and from carbon monoxide poisoning because of faulty heating sources. Be sure to place your electrical heating source in a safe place away from curtains and combustible materials. If you have a gas furnace, install carbon monoxide detectors. Always install smoke detectors; they could save your life this winter.

Be weather smart and follow these additional safety rules—it could save your life!

Additional tips:

1) Winterize your home by insulating pipes near outside walls and sealing leaks that might expose pipes to cold air.



(Above) A severe ice storm that hit Oklahoma in 2007 snapped powerlines and covered roads with ice, making road conditions difficult and dangerous to drive on.

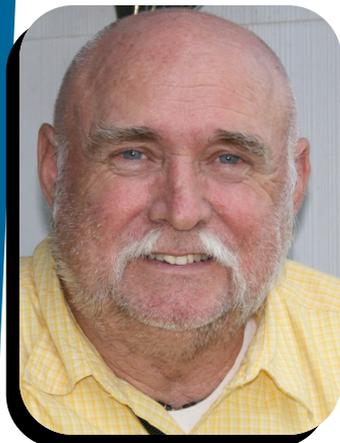
2) Ensure heating systems, fireplaces and wood stoves are clean, well ventilated and in good working condition.

3) Winterize your vehicle by checking wipers, tires, lights, and fluid levels. Prepare a travel disaster supply kit containing food, drinking water, blankets, rain gear, extra clothing, flashlights with extra batteries, jumper cables and a first aid kit.

4) If you plan to travel, keep your gas tank at least half full and be prepared for alternative travel plans in case bad weather forces trip delays. Do not travel when such conditions threaten.

5) Check on friends and family members whose health or age especially the very young and very old may put them at greater risk from cold weather or freezing temperatures.

STAFF SPOTLIGHT



NWS Corpus Christi Wishes Larry a Happy Retirement

Larry Maifeld, of the National Weather Service in Corpus Christi retired on October 31, 2009. Larry was faithful and committed to government service for 48 years. Larry served as a civil servant for 28 years service in the National Weather Service. Larry earned a reputation for your

leadership marked by his infectious laugh and tremendous energy. Larry also served our country for 20 years in the U.S. Air Force with tours in Illinois, Hawaii, California, Texas, Florida, Washington D.C., Nebraska and Vietnam.

During his career, Larry worked tirelessly to broaden the public's awareness of the value of readiness and preparedness, expanding our country's Cooperative Network, and performing in a stellar fashion in the upper air and weather observations program. The

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STAFF SPOTLIGHT - CONTINUED

(Continued from page 8)

National Weather Service is blessed to be on the receiving end of his years of duty that has set a standard of excellence in his role as a Meteorological and Hydrometeorological Technician (HMT) in Honolulu (1981 to 1984), Brownsville (1984 to 1987), Stephenville (1987 to 1994), Fort Worth (1994-1995) and as a HMT and Observations Program Leader at the Weather Forecast Office in Corpus Christi (1995 to 2009).

Larry Maifeld built many partnerships with the Cooperative Network, Emergency Management, the media, and first responders, where he always stressed the importance of building strong relationships within the community. This has enhanced our agency's mission to work together to save lives. The National Weather Service in Corpus Christi was bestowed two National Isaac Cline Awards for

his extraordinary achievements and leadership in support of the Upper Air program in 2001 and 2005 meeting our organization's critical objectives of collecting critical and reliable meteorological and climatic data.

We congratulate Larry on such a brilliant, long, and varied career serving the American people. His roots are deep in commitment to the National Weather Service (NWS) where he stretched as far as you could by giving of himself and providing for others. Larry will forever be part of the NWS family. Larry has contributed to our strong NWS heritage through his many years of hard work and devotion. Our best wishes go with Larry as he faces those exciting days of pure leisure—long conversations, unhurried visits, uninterrupted rest. After retirement, Larry will travel the nation, meeting new people and enjoying his family which are scattered throughout the United States. We wish Larry well with many blessings, much joy and happiness.

A LOOK AHEAD - CONTINUED

(Continued from page 3)

for our region to experience either normal or below normal conditions (50 percent combined). Along with the increased rainfall our temperatures would more likely be below normal. A stronger and more active jet stream can bring the wetter conditions that are often observed in El Niño (Fig. 3). This is great news since South Texas experienced the hottest summer on record and the driest since 1917 (see the Drought of 2009 story).

Please visit www.cpc.noaa.gov for the latest on ENSO.

Corpus Christi rainfall from November to April during past winters:

For El Niño seasons: **11.78 inches (18 years)**

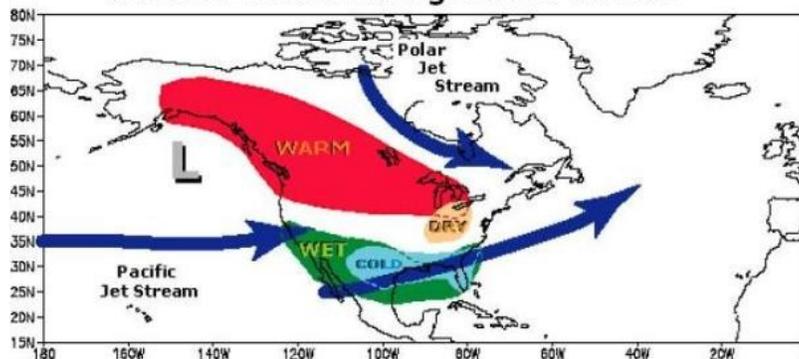
For La Niña seasons: **7.17 inches (22 years)**

For Neutral seasons: **10.60 inches (19 years)**

A weak and moderate season is forecast for 2010. In the past, the average precipitation for a weak and moderate season drops to 11.25 inches and varies from 6.13 (winter 1988) to 23.04 (winter 1958).

The most recent moderate El Niño in 2006-2007 brought 10.72 inches from November to April.

Typical US Temperature, Precipitation and Jet Stream Patterns during El Niño Winters



(Above—Fig 3) The general jet stream pattern during El Niño winters. This pattern is usually more pronounced and persistent during moderate and strong El Niño episodes. Note the southern branch of the jet stream moving across South Texas and the elongated Pacific Jet taking aim on

www.weather.gov/corpuschristi

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DO YOU HAVE ANY COOL SOUTH TEXAS WEATHER PHOTOS THAT YOU WOULD LIKE TO SHARE IN OUR NEXT NEWSLETTER? SEND THEM OUR WAY!

EMAIL PHOTOS TO [JASON.RUNYEN@NOAA.GOV](mailto:jason.runyen@noaa.gov)